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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Balkin et al.

Serial No.: 10/757,480

Filed: 01/15/2004

Title: Method and System for Predicting  
Human Cognitive Performance

Attorney Docket No.: WRA 97-09F2CON2

Group Art Unit: 3736

Examiner: To Be Assigned

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

Dear Sir:

This Information Disclosure Statement is submitted:

- ☒ under 37 CFR 1.97(b), or  
(Within three months of filing national application; or date of entry of  
international application; or before mailing date of first office action on the  
merits; whichever occurs last)
- ☐ under 37 CFR 1.97(c) together with either a:  
☐ Certification under 37 CFR 1.97(e), or  
☐ a \$180.00 fee under 37 CFR 1.17(p), or  
(After the CFR 1.97(b) time period, but before final action or notice of  
allowance, whichever occurs first)
- ☐ under 37 CFR 1.97(d) together with a:  
☐ Certification under 37 CFR 1.97(e), and  
☐ a petition under 37 CFR 1.97(d)(2)(ii), and  
☐ a \$130.00 petition fee set forth in 37 CFR 1.17(i)(1).  
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but before payment of the issue fee)

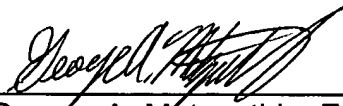
Applicant(s) submit herewith Form PTO 1449-Information Disclosure Citation  
with copies, of publications or other information of which applicant(s) are aware, which  
applicant(s) believe(s) may be material to the examination of this application and for  
which there may be a duty to disclose in accordance with 37 CFR 1.56.

Copies of the listed documents are not being provided under 37 CFR 1.98(d), because copies are present in U.S. Application Serial No. 10/377,602 filed March 4, 2003 to which priority has been claimed.

Neither this statement nor the listing of these documents on the accompanying form PTO-1449 should be considered as an admission by Applicant(s) that these materials are prior art as to Applicant(s). In addition, this statement should not be construed as a representation that no better disclosures exist.

Entry of the Information Disclosure Statement and the accompanying Form PTO-1449 are respectfully solicited.

Respectfully submitted,



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November 19, 2004

document under WIPO Standard ST. If it is possible, Applicant is to place a check mark here if English language translation is attached.

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Substitute for form 1449A/PTO				<b>Complete if Known</b> <b>Application Number</b> 10/757,480 <b>Filing Date</b> 1/15/2004 <b>First Named Inventor</b> Balkin et al. <b>Art Unit</b> 3736 <b>Examiner Name</b> To Be Assigned <b>Attorney Docket Number</b> WRA 97-09F2CON2	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>					
Sheet	2		6		

Examiner Initials*	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
	U	US-5,720,294	02/24/1998	SKINNER, JAMES E.	
	V	US-5,762,072	06/09/1998	CONLAN et al.	
	W	US-5,813,993	09/29/1998	KAPLAN et al.	
	X	US-5,911,581	06/15/1999	REYNOLDS et al.	
	Y	US-5,995,868	11/30/1999	DORFMEISTER et al.	
	Z	US-6,066,092	05/23/2000	CADY et al.	
	AA	US-6,070,098	05/30/2000	MOORE-EDE et al.	
	BB	US-6,113,538	09/05/2000	BOWLES et al.	
	CC	US-6,241,686	06/05/2001	BALKIN et al.	
	DD	US-6,287,262	09/11/2001	AMANO et al.	
	EE	US-6,419,629	07/16/2002	BALKIN et al.	
	FF	US-6,527,715	03/04/2003	BALKIN et al.	
	GG	US-6,530,884	03/11/2003	BALKIN et al.	
	HH	US-6,553,252 B2	04/22/2003	BALKIN et al.	
	II	US-6,579,233 B2	06/17/2003	HURSH, STEVEN R.	
	JJ	US-6,740,032	05/25/2004	BALKIN et al.	
	KK	US-6,743,167	06/01/2004	BALKIN et al.	
	LL	US-2003/0018242 A1	01/23/2003	HURSH et al.	
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<sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04.

<sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of

the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the

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			Application Number	10/757,480	
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			Group Art Unit	3736	
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Sheet	3		6	Attorney Docket Number	WRA 97-09F2CON2

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	<sup>2</sup>
	MM	AKERSTEDT et al., "Subjective and Objective Sleepiness in the Active Individual," International Journal of Neuroscience, 1990, Vol. 52, pp. 29-37.	
	NN	ANGUS et al., "Effects of Sleep Loss on Sustained Cognitive Performance During a Command and Control Stimulation," Behavior Research Methods, Instruments, & Computers, 1985, Vol. 17, No. 1, pp. 55-67.	
	OO	BEERSMA, DOMIEN G. M., "Models of Human Sleep Regulation," Sleep Medicine Reviews 1998, Vol. 2, No. 1, pp. 31-43.	
	PP	BELENKY et al., "Sustaining Performance During Continuous Operations: The U.S. Army's Sleep Management System," Proceedings of the Army Science Conference, 1996, pp. 1-5.	
	QQ	BONNET, M. H., "Sleep Restoration as a Function of Periodic Awakening, Movement, or Electroencephalographic Change," Sleep, 1987, Vol. 10, No. 4, pp. 364-373.	
	RR	COLBURN et al., "An Ambulatory Activity Monitor with Solid State Memory," paper presented at the 13 <sup>th</sup> Annual Rocky Mountain Bioengineering Symposium and 13 <sup>th</sup> International ISA BioMedical Sciences Instrumentation Symposium (Instrument Society of America), May 3-5, 1976, pp. 117-122.	
	SS	COLE et al., "Automatic Sleep/Wake Identification from Wrist Activity," Sleep, 1992 Vol. 15, No. 5, pp. 461-469.	
	TT	DINGES et al., "Cumulative Sleepiness, Mood Disturbance, and Psychomotor Vigilance Performance Decrements During a Week of Sleep Restricted to 4-5 Hours per Night," Sleep, 1997, Vol. 20, No. 4, pp. 267-277.	
	UU	DINGES et al., "Principles and Guidelines for Duty and Rest Scheduling in Commercial Aviation," NASA Technical Memorandum 110404, May 1996, pp. 1-10.	
	VV	DIJK et al., "Paradoxical Timing of the Circadian Rhythm of Sleep Propensity Serves to Consolidate Sleep and Wakefulness in Humans," Neuroscience Letters, Vol. 166, No. 1, pp. 63-68.	
	WW	EDGAR et al., "Effect of SCN Lesions on Sleep in Squirrel Monkeys: Evidence for Opponent Processes in Sleep-Wake Regulation," Journal of Neuroscience, March 1993, Vol. 13, No. 3, pp. 1065-1079.	

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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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Sheet	4		6		

OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS			
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	XX	FISCHLER, BENJAMIN, "Review of Clinical and Psychobiological Dimensions of the Chronic Fatigue Syndrome: Differentiation from Depression and Contribution of Sleep Dysfunctions," Sleep Medicine Reviews, 1999, Vol. 3, No. 2, pp. 131-146.	
	YY	FLETCHER et al., "A Predicative Model of Work-related Fatigue Based on Hours of Work," Journal of Occupational Safety, 1997 Vol. 13, No. 5, pp. 471-485.	
	ZZ	GOLDSTEIN, HARRY, "Resetting the Circadian Clock," The Pennsylvania Gazette, May 1999 (printed from <a href="http://www.upenn.edu/gazette/0599/goldstein.html">http://www.upenn.edu/gazette/0599/goldstein.html</a> and <a href="http://www.upenn.edu/gazette/0599/goldstein2.html">goldstein2.html</a> on Oct. 18, 2000)	
	AAA	HENDY et al., "Combining Time and Intensity Effects in Assessing Operator Information-Processing Load," Human Factors, 1997, Vol. 39, No. 1, pp. 30-47.	
	BBB	HOCKEY, G. ROBERT J., "Compensatory Control in the Regulation of Human Performance under Stress and High Workload: A Cognitive-energetical Framework," Biological Psychology, 1997, Vol. 45, pp. 73-93.	
	CCC	HODDES et al., "Quantification of Sleepiness: A New Approach," Psychophysiology, July 1973, Vol. 10, No. 4, pp. 431-436.	
	DDD	JOHNS, MURRAY, "Daytime Sleepiness, Snoring, and Obstructive Sleep Apnea: The Epworth Sleepiness Scale," Chest, January 1993, Vol. 103, No. 1, pp. 30-36.	
	EEE	JOHNS, MURRAY, "Rethinking the Assessment of Sleepiness," Sleep Medicine Reviews, 1998, Vol. 2, No. 1, pp. 3-15.	
	FFF	KRIPKE et al., "Wrist Actigraph Measures of Sleep and Rhythms," Electroencephalography and Clinical Neurophysiology, 1978, Vol. 44, pp. 674-676.	
	GGG	LAWLOR, MARYANN, "Personal Physiological Monitors Find Warfighter-Effectiveness Edge," Signal, August 2000, Vol. 54, No. 12, pp. 47-50.	
	HHH	LUBIN et al., "Effects of Exercise, Bedrest and Napping on Performance Decrement During 40 Hours," Psychophysiology, Vol. 13, No. 4, pp. 334-339.	

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	III	MITLER et al., "Methods of Testing for Sleepiness," Behavioral Medicine, 1996, Vol. 21, pp. 171-183.	
	JJJ	MONK et al., "A Parallelism between Human Body Temperature and Performance Independent of the Endogenous Circadian Pacemaker," Journal of Biological Rhythms, April 1998, Vol. 13, No. 2, pp. 113-122.	
	KKK	NEWHOUSE et al., "Stimulant Drug Effects on Performance and Behavior After Prolonged Sleep Deprivation: A Comparison of Amphetamine, Nicotine, and Deprenyl," Military Psychology, 1992, Vol. 4, pp. 207-233.	
	LLL	NEWHOUSE et al., "The Effects of d-Amphetamine on Arousal, Cognition, and Mood After Prolonged Total Sleep Deprivation," Neuropsychopharmacology, 1989, Vol. 2, No. 2, pp. 153-164.	
	MMM	PENETAR et al., "Amphetamine Effects on Recovery Sleep Following Total Sleep Deprivation," Human Psychopharmacology, 1991, Vol. 6, pp. 319-323.	
	NNN	PRIEST, DANA, "War and Sleep," The Washington Post Magazine, Nov. 19, 2000, pp. 16-20, 26-28.	
	OOO	REDMOND et al., "Observations on the Design and Specifications of a Wrist-Worn Human Activity Monitoring System," Behavior Research Methods, Instruments, & Computers, 1985, Vol. 17, Issue 6, pp. 659-669.	
	PPP	ROSEKIND, et al., "Alertness Management in Long-Haul Flight Operations," Proceedings of the 39 <sup>th</sup> Annual Corporate Aviation Safety Seminar, 1994, pp. 167-178 (printed from the NASA website).	
	QQQ	SHI, et al., "Using Artificial Neural Network for Sleep/Wake Discrimination from Wrist Activity: Preliminary Results," Proceedings of the 20 <sup>th</sup> Annual International Conference of the IEEE Engineering in Medicine and Biology Society, 1998, Vol. 20, No. 3, pp. 1113-1115.	
	RRR	THOMAS et al., "Regional Cerebral Metabolic Effects of Prolonged Sleep Deprivation," NeuroImage, 1998, Vol. 7, No. 3, p. S130.	
	SSS	THORNE et al., "Plumbing Human Performance Limits During 72 Hours of High Task Load," Proceedings of the 24 <sup>th</sup> DRG Seminar on the Human as a Limiting Element in Military Systems,	

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	TTT	VAN SOMEREN, EUS J. W., "Actigraphic Monitoring of Movement and Rest-Activity Rhythms in Aging, Alzheimer's Disease, and Parkinson's Disease," IEEE Transactions on Rehabilitation Engineering, December 1997, Vol. 5, No. 4, pp. 394-398.	
	UUU	Advertiser flyer for "The Actiwatch-Score," Cambridge Neurotechnology.	
	VVV	Advertiser flyer for "The Actiwatch Software," Cambridge Neurotechnology.	
	WWW	Advertiser flyer for "The Actiwatch and Actiwatch Plus," Cambridge Neurotechnology.	
	XXX	Cambridge Neurotechnology, printouts from company website at <a href="http://www.camntech.co.uk/main.html">HTTP://WWW.CAMNTECH.CO.UK/MAIN.HTML</a> , September 18, 1998.	

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